PATENT CLAIMS

1. A method for connection and adjustment of optical units, according to which the optical units are arranged in pairs and fastened movably or immovably and at a distance one from the other to carriers, at least one of which is movable, the two carriers being connected one to the other by a third, interstitial body, the three bodies forming an optical channel, which is isolated from or communicating with the surroundings and has a medium which is homogeneous or heterogeneous as regards its composition and optical properties, whereupon the carriers of a certain pair of optical units are spatially orientated until the desired relative position is achieved, i.e. position of coaxiality, or parallelism, or intersection or crossing of the optical axes of the optical units carried thereby, byy means of iterative series of stepwise shifts and locking of the movable optical unit, accompanied by a running check of the relative position of the optical units optical axes, characterised by, that in the case of one movable and one immovable carrier, the orientation thereof is effected by a series of iterative pairs of interdependent, consecutively alternating in each pair, rectilinear and angular or angular and rectilinear shifts of the movable carrier, while in the case of two movable carriers the inter-orientation thereof is performed by two consecutive series of mutually independent iterative shifts of each carrier, one of the series consisting of only rectilinear shifts of one of the carriers and the second series consisting of only angular shifts of the other carrier, in both cases the rectilinear shifts of the movable carrier/s being effected perpendicularly to the axis of at least the interstitial body, which is movable or immovable, or to the coaxial

thereto carrier/s as well, while the angular shifts are effected around a permanent point on the axis of the angularly shifted carrier, in both cases locking of each movable carrier being effected along with the respective shifts or only during each angular shift following a rectilinear shift of the carrier, whereat in each following operation the locking force gets stronger until its optimal value is reached in the last locking, and in case the optical channel has to be isolated from the surroundings the last operation of shifting and locking of the movable carrier is followed by a check of the sealing of the mechanical links between the bodies forming the channel.

2. A method, according to claim 1, wherein, in order to effect the rectilinear shifts of a movable carrier, both in the case of one or two movable carriers, the carrier is acted upon along axes situated in a plane perpendicular to the axis of at least the interstitial body, while for effecting the angular shifts of the movable carrier the latter is acted upon along axes parallel to its axis or to the axis of the interstitial body.

3. A device for connecting optical units comprising at least one triad of two end bodies and one interstitial body for each pair of optical units, said bodies being connected and locked by screws subjected to compression or tension, thus forming an optical channel with a homogeneous or heterogeneous medium, at least two of each triad of bodies having opposite central through holes shaping the opening of the optical channel, whose axis is rectilinear in the case of one triad of bodies or angularly refracted or branched from a common point in the case of more than one triad of bodies with a common immovable body, the two end bodies of each triad having each a bearing surface, either threaded or smooth, for the

respective optical unit, while one of the immovable bodies represents a housing of the device and has an attachment surface for external mounting of the device, characterised by that the three bodies of each triad are hard, one of the end bodies and the interstitial body being axially connected by a spatial or plain hinge, while the second end body and the interstitial body are frontally connected in a common slip plane transversal to their axes, whereat the hinge contact surfaces are part of a concave sphere and a base of a right circular cylinder or part of a concave cylinder and a base of a parallelepiped or a cube, or a part of a concave ellipsoid and a base of an elliptic cylinder, each of the concave contact surfaces of the hinge having a centre on the symmetry axis of the body hinged therein, or a central axis crossing the said symmetry axis, while the centre and the central axis of the respective concave contact surfaces of the hinge are disposed either between the bodies placed therein, or within the volume of one of the end bodies , or outside the three bodies, whereat the interstitial body and the second end body frontally connected in a slip plane, have each a front contact surface transversal to the axis thereof, and each movable body is connected to the respective neighbouring body and locked by the same coupling and locking screws for rectilinear or for angular adjustment shifts of the body, a part of the screws being possible to replace by functionally equivalent support spring elements, all of the screws being arranged in groups of the same or different number of screws and placed in one or two of the triads of bodies, whereat the screws of one of the groups are subjected to compression and are disposed along axes perpendicular to the axes of both the interstitial body and the end carrier frontally connected therewith, while the screws of the other group are either

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subjected to compression and disposed along axes parallel to the axis of the end carrier in which they are placed and which is hinged to the interstitial body, or they are subjected to tension and disposed along axes parallel both to the axis of the body they are placed in and to the axis of the interstitial body, the axes of the two groups of coupling and locking screws being mutually crossing and/or perpendicularly intersecting.

4. A device according to claim 3, wherein the interstitial body is a housing of the device and has an attachment surface for external mounting of the device, as well as a bearing surface for additional optical units, the latter being disposed either between the two connected and adjusted optical units or outside them.

5. A device according to claim 4, wherein the interstitial body consists of axially connected immovable part and movable parts, the immovable part being a housing of the device.

6. A device according to claim 4, wherein the attachment surface for external mounting of the device is a rotational surface or a plane of the respective immovable end carrier or an interstitial body defining a housing of the device.

7. A device according to claim 3, wherein the transversally slipping interstitial body touches a spring element, which is disposed opposite the coupling and locking screws carried by the end carrier, the latter being in contact with the interstitial body in the slip plane.

8. A device according to claim 3, wherein the contact surfaces of the hinged bodies and the contact planes of the bodies, frontally connected in a slip plane, are tightened by the coupling and locking screws for angular displacement of

the movable body or only the contact surfaces of the hinged bodies are tightened by said screws, while the contact planes of the frontally slipping bodies are tightened in a constant, immovable fit in guides.

9. A device according to claim 3, wherein the coupling and locking screws for angular displacement of the movable carrier are placed along the axis of the optical channel of the device, tightening the three bodies of each triad together or in pairs with a common interstitial body and an end carrier.